



MASSACHUSETTS WETLANDS RESTORATION NEWS

The Newsletter of the Partnership to Restore Massachusetts Wetlands

Winter 2002

Coastal America: A Decade of Progress

The Coastal America Partnership celebrated its 10th Anniversary on October 2, 2001 in Washington, DC. The celebration enjoyed bipartisan support on the Congressional level and representation from all our federal partners agencies, as well as many of our state, corporate and non-governmental organization partners. The event truly demonstrated the broad support Coastal America has worked to achieve.

WHAT IS COASTAL AMERICA? Coastal America is a unique action-oriented partnership to restore and protect our coastal environment. This partnership brings the resources, expertise and authorities of the federal agencies together with state, local, tribal and non-governmental organizations to accomplish tasks that no one group could tackle alone. The partnership operates through a national, regional and local team structure that brings together key participants. This collaborative multi-agency approach enables national policy matters to be identified and resolved; regional strategic plans to be developed; and local projects to be initiated, prioritized, and completed in a timely and cost-efficient manner.

Shovel-in-the-ground Projects. Coastal America's nine regional interagency teams identify local coastal problems and maintain a working list of priority projects. Examples of Coastal America projects include:

- Dam removal to allow upstream migration and spawn-

ing of anadromous fish.

- Wetland restoration to return degraded habitats to their natural conditions.
- Whale-sighting alert system to protect endangered right whales from ship strikes.
- Erosion controls along river banks and in dune areas to protect habitat.
- Non-point source pollution control programs on farms to reduce nutrient runoff.



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MWRP IS ON THE WEB

Now you can check the status of current restoration projects, order MWRP publications, read the latest issue of Massachusetts Wetlands Restoration News, learn about grant opportunities, link to a number of related sites, and download a variety of documents. Information ranging from the basics of salt marsh restoration to current news from the Massachusetts Corporate Wetlands Restoration Partnership is now available on-line from MWRP at www.mass.gov/envir/mwrp.

Mass Wetlands News goes electronic

As a cost cutting measure under current state budget constraints, and to save trees, Massachusetts Wetlands Restoration News is now electronic. The Winter 2002 edition is currently available on our website! Printed copies will no longer be distributed through the mail. There are two ways in which to access future editions of the semi-annual newsletter. *Recommended option:* To receive an e-mail notice with a direct web link to each newsletter at the time of publication, send an e-mail request with the subject "Newsletter" to wetlands.restoration@state.ma.us. Please include your full name and address as well as affiliation (company or organization) as appropriate. Alternatively, the newsletter may be manually accessed on the MWRP website at www.mass.gov/envir/mwrp. Please be aware that, if you sign up for our e-mail notifications, you will not have to remember to visit the website every six months, but will receive the e-mail notice with newsletter web link automatically.

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2002 GROWetlands Grant solicitation. See page 3

RECENT MWRP STAFF APPOINTMENTS

The Massachusetts Wetlands Restoration Program (MWRP) is pleased to announce the appointment of Tim Smith to the position of Wetland Scientist. From April 2000 to July 2001, Tim served as the North Shore Salt Marsh Restoration Coordinator, a half-time position funded by North Shore coastal watershed teams. Tim will continue to work on North Shore projects such as the North Pool in Newburyport (See article on page 10) and Eastern Point in Gloucester (see Spring 2001 newsletter) as well as managing other coastal and inland restoration projects.

Tim Smith has more than ten years of experience in ecological land management and restoration. He worked as Essex County property manager for Massachusetts Audubon Society from 1989 to 1996 and more recently worked on urban wetland restoration projects in New York City and Boston. Tim can be reached at (617) 292-5808 or tim.smith@state.ma.us.

MWRP is also pleased to announce the appointment of Georgeann H. Keer to the position of Wetland Scientist.

Georgeann will focus primarily on coastal marsh restoration projects. This position has been established as a cooperative effort of Massachusetts Coastal Zone Management and MWRP.

Georgeann has approximately 6 years of experience conducting research, management, and restoration activities related to the structure and functioning of various ecological communities. Prior to joining the MWRP, Georgeann served as a project manager with NY City's Natural Resources Group and the Salt Marsh Restoration Team where she was responsible for coordinating and implementing restoration and monitoring activities designed to increase the acreage of native coastal habitat and improve biodiversity and environmental quality throughout NY City's park lands. She received her M.S. in 1999 from San Diego State University while working as a research assistant with the Pacific Estuarine Research Laboratory from 1996 to 1999. In 1996 she served as a native plant propagationist with the Center for Arid Lands Restoration at Joshua Tree National Park, and in 1995 she surveyed freshwater wetlands for the National Wetlands Inventory. Georgeann may be reached at (617) 348-4085 or georgeann.keer@state.ma.us.



GROWetlands Project Updates

Following are just a few of the projects Massachusetts Wetlands Restoration Program (MWRP) is supporting through the GROWetlands (Groups Restoring Our Wetlands) Initiative. To discuss a potential GROWetlands project with an MWRP wetland scientist, call (617) 626-1177.

LITTLE NECK ROAD SALT MARSH RESTORATION PROJECT COMPLETED

Regular tidal flushing has been restored to six acres of salt marsh along Little Neck Road in Ipswich through the cooperative efforts of the Town of Ipswich, Eight Towns and The Bay (8T&B) and MWRP. The marsh is part of a larger system called the Great Marsh, which has been designated by the Secretary of Environmental Affairs as an Area of Critical Environmental Concern (ACEC).

Like many salt marshes on the North Shore, this marsh was impacted by construction of a road in the 1930s and by surrounding residential development. An undersized culvert beneath the roadway restricted tidal flushing and allowed freshwater to inundate the marsh. Over the years, invasive plants such as Common Reed (*Phragmites australis*), encroached on native salt marsh plant species unable to compete in the brackish conditions. Without sufficient tidal exchange, the marsh was not able to discharge floodwater

and stormwater runoff, often causing the roadway to flood. To make matters worse, the undersized culvert collapsed in the Spring of 2000, undermining the road and completely blocking tidal exchange. Freshwater accumulated on the upstream side of the road, drowning some of the vegetation.

The Little Neck Road marsh was identified as a site warranting restoration in an inventory of 125 tidally-restricted marshes in the North Shore region commissioned by 8T&B in 1996. The restoration project involved the replacement of the old 24-inch diameter culvert with two larger aluminum arch culverts, 43-inches wide by 27-inches high. The Natural Resources Conservation Service (NRCS) provided design and engineering services for the project, in addition to a \$10,000 grant to the Town of Ipswich. The town contributed over \$27,000 towards the project.

Armand Michaud, Director of Public Works for Ipswich, was instrumental in getting the restoration project complet-

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Little Neck before culvert replacement



Little Neck after culvert replacement

Restoration Funding Opportunities



There are a number of public and private funding programs that support wetland restoration projects. Following are descriptions of three such programs that are currently soliciting proposals. Participation in MWRP's GROWetlands Initiative is a

good way to ensure that your project is best positioned to take advantage of funding opportunities. MWRP staff will help GROWetlands project sponsors develop project ideas, assist with technical aspects of the project, and help identify and apply to the most likely funding sources.

Massachusetts wetland restoration project sponsors are strongly encouraged to discuss their projects with an MWRP wetland scientist in advance of submitting a grant application. Contact MWRP by calling (617) 626-1177 or emailing wetlands.restoration@state.ma.us.

GROWETLANDS GRANT PROGRAM UPDATE

2002 GROWETLANDS GRANTS PROGRAM REQUEST FOR PROPOSALS:

MWRP plans to release its Request For Responses (RFR) for 2002 GROWetlands Grants on February 1, 2002, with a grant application deadline of April 1, 2002. Once released, the RFR may be accessed at <http://www.comm-pass.com/comm-pass> (select "open solicitations" and then "professional services"). A total of up to \$100,000 may be awarded to cities and towns for the purpose of wetland restoration project design (e.g., engineering, surveying, permitting) or implementation (e.g., permitting, construction). Until the RFR is released, MWRP staff may discuss project ideas with potential applicants. To create a level playing field for all potential applicants, MWRP may not provide direct assistance once the RFR is posted.

2001 GROWETLANDS GRANTS: The Massachusetts Wetlands Restoration Program awarded a total of \$31,300 to three projects through its 2001 GROWetlands Grants. The recipients were: Town of Rockport (\$6,300), Town of Bourne (\$19,000), and City of Quincy (\$6,000). Following is a brief description of each project.

The Town of Rockport applied for a GROWetlands grant to help design a 3-acre salt marsh restoration project at the Saratoga Creek-Seaview Street salt marsh. Currently, an undersized culvert in Seaview Street restricts full tidal flows from entering the salt marsh. The Town will use the GROWetlands grant to conduct a field survey and to help plan and design the replacement of the existing culvert with a larger culvert sized to restore tidal flows to the salt marsh. This is the second GROWetlands grant awarded to the Town of Rockport.

The Town of Bourne and its partners (NRCS, Wing's Neck Neighborhood Association, Bourne Conservation Commission) have designed the restoration of a 10-acre salt marsh at Wings Neck Road. The project consists of replacing an existing undersized culvert with two culverts sized to restore full tidal flows to the marsh. The GROWetlands grant will be used to help fund project construction. (A more detailed article on this project appears in the Spring 2001 issue of "Massachusetts Wetlands Restoration News".)

The City of Quincy, in collaboration with the Hough's Neck Seacoast and Salt Marsh Group, is planning to restore approximately one acre of salt marsh at Mallard Road. The City will use the GROWetlands grant to help plan the restoration, including conducting a field survey and developing a project design.



FIVE-STAR RESTORATION CHALLENGE GRANTS

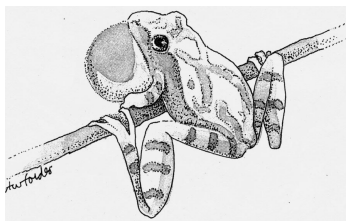
The National Association of Counties, the National Fish and Wildlife Foundation, and the Wildlife Habitat Council, in cooperation with the U.S. Environmental Protection Agency (EPA), the Community-Based Restoration Program within National Oceans and Atmospheric Administration, National Marine Fisheries Service, and other sponsors, are currently soliciting applications for the Five-Star Restoration Challenge Grant Program. The Five-Star Restoration Program provides modest financial assistance on a competitive basis to support community-based wetland, riparian, and coastal habitat restoration projects that build diverse partnerships and foster local natural resource stewardship through education, outreach, and training activities. In 2001, 60 projects received grants of on average \$10,000 out of approximately 230 applications received.

The stars in "Five-Star" are the partners, funders, and/or participants necessary to complete the project including: schools or youth organizations; local or tribal governments, local businesses or corporations, conservation organizations or local citizens groups, state and federal resource management agencies, and foundations or other funders. Projects must involve diverse partnerships of ideally five organizations that contribute funding, land, technical assistance, workforce support, and other in-kind services. Awards are between \$5,000 and \$20,000. Projects must include a strong on-the-ground wetland, riparian, or coastal habitat restoration component and should also include education, outreach, and community stewardship components. Projects involving only research, monitoring or planning are not eligible for funding.

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MWRP and Partners Catalog More Coastal Restoration Sites

MWRP has been working with several partner agencies to develop atlases of potential coastal wetland restoration sites. By identifying and prioritizing sites, MWRP can work proactively to seek project sponsors and work with them to implement the most significant coastal projects. Under the GROWetlands Initiative, which is supported by the Coastal America Partnership (See article on page 1), MWRP may provide or secure financial, technical and other assistance for restoration projects.



SOUTH SHORE: In June 2001, the Metropolitan Area Planning Council (MAPC), under contract to MWRP, published the “Final Atlas of Tidal Restrictions on the South Shore of Massachusetts”. The Atlas identifies 121 tidal restrictions and prioritizes them into low, medium, and high categories based on several characteristics including size of affected marsh, presence of anadromous fish run, and location within a designated Area of Critical Environmental Concern (ACEC). MWRP is evaluating several of the high priority sites to determine which projects our program should pursue. We anticipate that within the next year a few of the most promising sites will be selected for feasibility studies and will begin to move forward toward restoration. MAPC distributed copies of the Atlas to officials within each study area town, as well as to regional environmental groups and other interested parties. Copies are available by contacting Bill Clark within MAPC at (617) 451-2770 or email bclark@mapc.org.

BUZZARDS BAY: The Buzzards Bay Project (BBP) has targeted January 2002 for the release of the “Final Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed”. Commissioned and funded by MWRP, the Final Atlas will identify, characterize, and prioritize over 250 tidal restrictions within the study area. After obtaining and analyzing higher quality aerial photos over the summer, BBP identified 97 new restrictions that were not included in the Draft Atlas, and staff are working diligently to field check, characterize and incorporate these new sites into the Final Atlas. Once complete, the Atlas will be mailed to a broad stakeholder list and efforts will turn toward implementing some of the highest priority restoration projects. Check out the BBP web site for more information on the Draft and Final Atlas at www.buzzardsbay.org. Contact Sarah Wilkes to be placed on the Atlas distribution list at (508) 291-3625 or sarah.wilkes-env@state.ma.us.

CAPE COD: The Cape Cod region appears to have many promising tidal restoration projects. Under agreement with MWRP, The Cape Cod Commission (CCC) will soon com-

plete the “Cape Cod Atlas of Tidally Restricted Salt Marshes”. The Atlas will identify and characterize over 110 Cape Cod tidal restrictions. In October, after reviewing a preliminary draft, MWRP staff visited several tidal restriction sites within the study area and noted many promising candidates for restoration projects – some with the potential to restore 50-100 acres or more of degraded estuarine environments. MWRP and its partners already have several Cape Cod projects underway, and once the Final Atlas is complete, we will be better able to target future resources to the most valuable restoration sites. CCC expects to distribute the Final Atlas in early 2002. To be placed on the Atlas distribution list, contact Stacey Justus at (508) 362-3828 or bsjustus@capecodcommission.org.

RUMNEY MARSH: This past June, MWRP and the Massachusetts Department of Environmental Management, Areas of Critical Environmental Concern (ACEC) Program completed the “Draft Rumney Marshes ACEC Salt Marsh Restoration Plan”. The Plan identifies lost or degraded salt marshes in Saugus, Winthrop, Revere, Boston and Lynn; documents problems with respect to flooding, water quality, and fish and wildlife habitat; and assesses the feasibility of addressing these problems by restoring salt marshes. It briefly reviews 14 restoration projects that are already underway or completed in the study area and identifies an additional 17 sites that contain approximately 200 acres of potentially restorable salt marsh.

MWRP and the ACEC Program mailed the Draft Plan to a broad group of interested parties and held a public meeting to discuss and obtain input on its findings. After incorporating suggested changes and new information obtained from public review, MWRP will finalize the Plan and distribute copies to ACEC communities, involved agencies, and other stakeholders. Once the Final Plan is complete, the ACEC Program and MWRP will stay involved to encourage, assist, and support implementation of salt marsh restoration projects. To find out more or to be placed on the Plan distribution list, contact Liz Sorenson at elizabeth.sorenson@state.ma.us.



Multi-Partner Collaboration Leads to Restoration



In recent years, the Natural Resources Conservation Service (NRCS) has partnered with the Massachusetts Wetlands Restoration Program and many others on wetland restoration projects throughout Massachusetts. NRCS advances these wetland restoration projects by providing technical expertise and funding through two government programs. Wetland restoration projects often qualify for federal conservation funding from the Wildlife Habitat Incentives Program (WHIP) or Wetlands Reserve Program (WRP). NRCS provides the leadership for these programs as well as engineering services.

The WHIP program is for improving wildlife habitat and restoring ecosystems. Applicants can receive NRCS technical assistance and up to 75 percent cost-share assistance for improving fish or wildlife habitat and for restoring and managing natural ecosystems. WHIP contracts generally last five to 10 years.

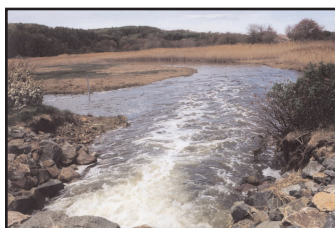
WRP helps landowners voluntarily protect, restore, and enhance wetlands that have been altered due to past agricultural activity. Under WRP, perpetual easements can be purchased from landowners and restoration agreements entered into, with NRCS providing 75 percent of the cost of the wetland restoration.

One example of a successful collaborative wetland restoration project supported by the NRCS is the salt marsh restoration project at Argilla Road, near Crane Beach in Ipswich. "The Argilla Road project is one of our early successes," NRCS District Conservationist Dan Lenthall said. "In 1998 we were able to replace a 30-inch culvert with a 5-foot-high by 8-foot-wide concrete box. Tidal flow into the marsh improved immediately and now we're seeing signs of stunted growth of the *Phragmites* and the gradual return of salt marsh vegetation."

NRCS designed the structure with provisions for flashboards on the upstream side to allow for the passing of significantly higher high tides while maintaining existing low tide levels. The 20-acre salt marsh has responded, according to the National Marine Fisheries Service (NMFS). NMFS and others are monitoring the site to evaluate the effects of the increased tidal flushing on vegetation, fish habitat, salinity, and tide elevations.



Argilla Road before culvert replacement



Argilla Road after culvert replacement

NOAA and NMFS spearheaded the Argilla Road salt marsh restoration project, obtained project funding, and brought many partners to the table to collaborate with the Town of Ipswich. NRCS provided the technical services. The Parker River Clean Water Association analyzed the tidal restriction. MWRP gave the project high priority status and helped detangle the regulations and restrictions involving deeds and permitting. Additional contributions came from the Trustees of Reservations, the Massachusetts Audubon Society, the Essex Conservation District, and local landowners.

In recent years NRCS has been a project partner and active participant on 11 wetland restoration projects in Massachusetts, many of which are receiving funding through WHIP or WRP:

LOG POND COVE PROJECT IN HOLYOKE WITH THE HOLYOKE WATER AND POWER COMPANY—water chestnut eradication, funding from WHIP;

LITTLE NECK MARSH PROJECT IN IPSWICH WITH THE TOWN OF IPSWICH—salt marsh restoration, survey and design by NRCS, funding from WHIP;

WINGS NECK PROJECT IN BOURNE WITH THE TOWN OF BOURNE—salt marsh restoration, survey and design by NRCS, funding from WHIP;

BROOKWOOD MARSH RESTORATION PROJECT IN NORTHAMPTON WITH THE CITY OF NORTHAMPTON—marsh restoration, funding from WHIP;

WORLD'S END/DAMDE MEDDOWS PROJECT IN HINGHAM WITH THE TRUSTEES OF RESERVATIONS—salt marsh restoration, survey and design by NRCS, funding from WRP;

ARGILLA ROAD PROJECT IN IPSWICH WITH THE TOWN OF IPSWICH—salt marsh restoration, survey and design by NRCS;

EASTERN POINT SALT MARSH IN GLOUCESTER WITH THE MASS. AUDUBON SOCIETY—salt marsh restoration, survey and design by NRCS;

NEPONSET MARSHES PROJECT IN BOSTON WITH THE METROPOLITAN DISTRICT COMMISSION—salt marsh restoration, surveys by NRCS;

CONOMO POINT PROJECT IN ESSEX WITH THE TOWN OF ESSEX—salt marsh restoration, survey and design by NRCS;

LITTLE RIVER COVE PROJECT IN NEWBURY WITH THE TRUSTEES OF RESERVATIONS—tidal marsh restoration, funding from WHIP; and

LONG WHARF PROJECT IN GLOUCESTER WITH THE CITY OF GLOUCESTER—tidal marsh restoration, funding from WHIP.

NRCS allocated a total of \$115,000 to these 11 wetland restoration projects through the WRP and WHIP conservation programs. To read more about NRCS conservation programs and technical assistance, visit: www.ma.nrcs.usda.gov.

Wendi S. Kroll
NRCS Public Affairs Specialist

AMWS and MWRP Team up for Biological Control of Purple Loosestrife

The Association of Massachusetts Wetland Scientists (AMWS), a non-profit partner of the Corporate Wetlands Restoration Partnership (CWRP), teamed up with the Massachusetts Wetlands Restoration Program (MWRP) to develop a pilot biocontrol program for Purple Loosestrife in Massachusetts.

Purple Loose-strife (*Lythrum salicaria*) is an aggressive invader of North American wetlands, lakes and rivers, often affecting the biodiversity of an area. Purple Loosestrife displaces native plants, eliminating food and shelter for wildlife and other species. While strikingly beautiful in flower, dense stands of loosestrife may impair recreational use of wetlands and rivers, impede water flow in drainage ditches and invade right-of-ways, requiring costly management efforts.

Conventional means of control, such as water level management, burning, herbicides, digging and cutting are extremely difficult, costly and impractical on a large scale. The biological alternative for control of Purple Loosestrife is the introduction of natural enemies from its native range in Asia and Europe - two species of plant-feeding beetles (*Galerucella californiensis* and *G. pusilla*).



Beetle propagation set up.

The AMWS/MWRP pilot program included propagation of the *Galerucella* beetles and long-term field monitoring following the protocol developed by Berndt Blossey of Cornell University and widely used in other states. Robin Reiner, Executive Director of AMWS, provided training to 20 project volunteers in April 2001. Volunteers included wetland scientists from AMWS, entomologists from three county mosquito control programs and two schools (Diamond Middle School in Lexington and the Waring School in Beverly). Teachers were provided with a comprehensive curriculum, designed in Michigan, to educate their students about the importance of wetlands and to help them play an active part in the project as propagators and host release sites. Volunteers raised the beetles at their homes from April through July 2001.

Due to time constraints, quantitative data on the young produced was based on visual observation only. Results varied widely among the host loosestrife plants. Plants yielding even a small number of young *Galerucella* (<100) resulted in a lack of flowering of the loosestrife host.



Galerucella life stages.

“Successful propagation” was represented by the ability to observe each life cycle stage of the *Galerucella*, a yield of thousands of young beetles per cage, and the total defoliation and die-off of the host loosestrife. Plants that appeared to host no young and presented a die-off of parent beetles became healthy, mature flowering specimens. Factors that may have affected the efficacy of the propagation include adverse weather (early frost, extreme winds and rain) and predation by earwigs, ladybugs and spiders. These predators may have been hiding on the plants prior to introduction of the cages or slipped under the sleeve encasing the plant. Another possible factor in the low numbers of young produced, and which needs to be considered in the released population to be monitored, may have been related to genetics. “Most unsuccessful attempts in classical biological control are the result of the natural enemy species failing to establish a permanent population in the new location. The presence of an Allee effect (a reduction in population growth rate at low densities) in newly released biocontrol agent populations may be an important cause of failed establishment.” (Fritzi S. Grevstad, Section of Ecology and Systematics, Cornell University).

Beetles were release in four sites (Acton, Beverly, Lexington and Woburn) in August 2001. Sites were chosen by Steve Block of MWRP in accordance with their fit to the restoration program, those presenting optimal conditions for release of the beetles, and educational value for students. A second release of beetles will likely be introduced to the same sites in 2002. These sites will be monitored a minimum of three years for the establishment of a self-regulating beetle population and for the effectiveness of the beetles in Purple Loosestrife control. Pending available funding, staffing, and volunteers, the program may be expanded to include additional release sites.

For additional information on the beetles and the pilot program, visit the AMWS website at www.amws.org.

Robin Reiner, AMWS Executive Director

BERGER PREPARES QUIVETT CREEK MARSH RESTORATION PLANS

The Louis Berger Group was pleased to join the Massachusetts Corporate Wetlands Restoration Partnership (CWRP) in Spring 2001. Berger's contribution to the program includes the preparation of restoration plans and baseline fisheries monitoring for Quivett Creek marsh.

Quivett Creek is a meandering tidal creek that forms the northern-most boundary between Brewster and Dennis on Cape Cod. The upper reach of the associated salt marsh is bisected by an abandoned road (Sea Street). Flow is conveyed under the road bed via two dilapidated metal culverts. Tide gauges installed on both sides of Sea Street during June of this year, documented the extent of the tidal restriction caused by the undersized culverts. Quivett Creek marsh is a typical salt marsh with the interior mostly free of invasive plant species. Upgradient of the crossing, the borders of the marsh are largely dominated by *Phragmites*. An increase in tidal flow into the upper reach of the marsh will likely retard the advance of invasive vegetation and enhance habitat for juvenile fish. Culvert improvements will also ease the passage of river herring (in this case, alewife or *Alosa pseudoharengus*) which migrate to a spawning pond north of Route 6A.

The challenge of the restoration project is to design a replacement structure under Sea Street to enhance tidal circulation and fish passage while not adversely affecting adjacent, low-lying residential properties in Dennis. Several abutters currently experience basement flooding during the winter and spring. The restoration design is further complicated by the fact that the abandoned roadbed is routinely overtopped during storm events and has suffered major deterioration from lack of maintenance.

Berger conducted fisheries monitoring at Quivett Creek to establish the characteristics of the existing fish community that could be influenced by the restoration project. Monitoring included observations of river herring during their spring spawning run and collections of fish both upstream and downstream of the Sea Street culverts during the spring and summer. Once the incoming tidal influence approaches Sea Street, there is sufficient depth to enable relatively large numbers of river herring to migrate through the culverts and into the spawning pond. Herring were observed during May congregating in the pool on the

downstream side of both the Sea Street and Route 6A culverts, regardless of whether the tide was incoming or outgoing; the herring run was nearly over by June 4th.

Estimates of the number of fish in the pool downstream of Sea Street ranged from 30 to several hundred. We surmise that the dark, confined space of the culverts serves as a behavioral barrier to some upstream migrants. In addition,

measured flow velocities of 5 to 7 feet per second during the maximum outgoing tide could also serve as a barrier to upstream migration. Consequently, a replacement structure that reduces flow velocities and eliminates the dark corridor through which the herring must migrate, possibly by using an open grating concept, is under consideration. This design would also facilitate public viewing of the upstream migrating adults.

Berger also collected fish from Quivett Creek at two stations downstream of the Sea Street and two stations upstream over four dates between May and August. Our primary collection technique was a 25-foot-long bag seine, which we supplemented by high tide collections with an 8-foot diameter cast net. We collected a total of 4,392 fish in 29 seine hauls. By far the most dominant of the eight species collected was the mummichog (*Fundulus heteroclitus*), which comprised 92 percent of the total catch. This species is well adapted to varying salinity and temperatures and is likely the most common year-round resident of the Quivett Creek marsh. The pond at the head of Quivett Creek also seems to be a destination for migrating American eels (*Anguilla rostrata*), as we collected a total of 200 glass eels and elvers (5 percent of the total catch). Apparent recent population declines of this species emphasize the importance of providing habitat for the young and adult of this species.

The development of an acceptable restoration design is continuing under close coordination with the Massachusetts Wetlands Restoration Program, National Marine Fisheries Service, Town of Dennis officials, and concerned abutters.

Craig Wood and Doug Hjorth
The Louis Berger Group



Berger fisheries biologists Dan Davis (left) and Doug Hjorth seine Quivett Creek to characterize the existing fish community.

Massachusetts and Cape Cod Bays Ecosystem Restoration Study Underway

Through the Massachusetts and Cape Cods Bays Ecosystem Restoration Study, the Massachusetts Executive Office of Environmental Affairs (EOEA) and the U.S. Army Corps of Engineers (ACOE) continue to partner in their efforts to plan and construct projects that enhance the environment. The ACOE began a reconnaissance investigation early in 2001 that was authorized by a resolution of the U.S. House Committee on Transportation & Infrastructure in 1997. The purpose of this reconnaissance effort was to identify potential restoration sites (e.g., lost or degraded wetlands or other aquatic habitats) for further investigation (feasibility study) and eventual construction. The study area encompasses the watersheds of the Massachusetts and Cape Cod Bays, a total study area about 170 miles in length, reaching from the Massachusetts/New Hampshire border to Provincetown.

The investigation covers such a large geographic area that identifying potential restoration sites was a challenge. With Christy Foote-Smith of the Massachusetts Wetlands Restoration Program working as facilitator, the appropriate watershed Team Leaders were contacted to solicit input to the study. The watershed Team Leaders in turn canvassed other state agencies and local contacts to come up with a list of potential restoration projects in their area of responsibility. Representatives from the ACOE New England District office in Concord, Massachusetts, then met with the various watershed Team Leaders in the field to view the sites and assess their potential for restoration, in general, and for further Federal involvement, specifically. Through this process, the following restoration opportunities were identified:

HYDROLOGIC IMPROVEMENT OF VARIOUS WETLAND COMPLEXES

- ◆ Merrimack River Estuary/Plum Bush Creek – Newbury (80+ acres)
- ◆ Forest River – Salem (4 acres)
- ◆ Ballard Street Salt Marsh - Saugus (30 acres)
- ◆ Freshwater wetlands and estuarine complex of the Saugus River - Saugus, Revere, Everett, Malden, Lynn, Lynnfield, Wakefield (75 acres)
- ◆ Mill Creek Estuary - Chelsea (5 acres)
- ◆ Blair Pond/Alewife Brook – Cambridge, Belmont, Arlington (30 acres)
- ◆ Gulliver's Creek – Milton (40 acres)
- ◆ South Shore Tri-Town Development Corp – South Weymouth, Abington, Rockland (40 acres)
- ◆ Straits Pond – Hull - Cohasset (97 acres)
- ◆ Cordage Park Pond system – Plymouth (6 acres)

- ◆ Bluefish River salt marsh – Duxbury (20 acres)
- ◆ Ellisville Harbor salt marsh - Plymouth (50 acres)
- ◆ Bridge Creek – West Barnstable (75 acres)
- ◆ Herring River estuary – Wellfleet (600 acres)
- ◆ Pilgrim Lake – Truro, Provincetown (490 acres)

ANADROMOUS/CATADROMOUS FISH PASSAGE

- ◆ Baldpate Pond – Georgetown
- ◆ Saugus River & Lake Quannapowitt – Lynnfield, Wakefield
- ◆ Cordage Park (Mill) Pond – Plymouth
- ◆ Herring River estuary – Wellfleet

CONTAMINATED SEDIMENT REMEDIATION

- ◆ North River - Salem
- ◆ Forest River - Salem
- ◆ Malden River - Malden, Everett, Medford
- ◆ Town Line Brook - Revere, Malden, Everett

SHELLFISH BED RESTORATION

- ◆ Plum Bush Creek – Newbury
- ◆ Pines River - Revere, Malden, Everett

The next step in the investigation is to prepare a detailed scope of work for conducting feasibility studies on each of the sites. The feasibility study is cost shared between the ACOE and non-Federal sponsor(s) on a 50/50 cost-share basis and is the Federal decision document needed to obtain ACOE construction approval. Part of this scoping effort over the next six months will be to work with state, municipal, and private sources to pursue local shares of the required feasibility study costs. Once the feasibility study scope and cost is clearly defined for each project, the ACOE will enter into a formal agreement with the project sponsor to begin the work. Although timing will vary from project to project, construction is expected to begin no earlier than Summer 2002.

Christopher Hatfield
U.S. Army Corps of Engineers

Coastal America: A Decade of Progress

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COASTAL AMERICA HAS MUCH TO CELEBRATE. Since its inception in 1991, nearly 600 organizations have worked with the partnership on more than 600 coastal restoration and protection projects throughout the United States. Together, the partners have restored hundreds of thousands of wetland acres, re-established thousands of miles of streams for anadromous fish, reduced sources of pollution, and protected habitat for fish, birds, and mammals.

EDUCATION AND OUTREACH. In 1996, Coastal America's federal agency partners decided to improve their efforts to educate and involve the public in protecting and restoring our ocean and coastal resources. That same year, the New England Aquarium was designated as the first Coastal Ecosystem Learning Center in a network that now numbers 15 marine education centers across the country. With the help of Coastal America federal partners, the New England Aquarium has initiated several valuable education and restoration programs. The result is a public that is better served, more aware, and more involved.

CORPORATE PARTNERSHIPS

More recently, Coastal America joined forces with the Massachusetts Corporate Wetlands Restoration Partnership (CWRP), an initiative spearheaded by The Gillette Company, the Massachusetts Executive Office of Environmental Affairs and the U.S. Environmental Protection Agency. Through the CWRP, corporations work with federal, state, and local partners by contributing funds and expertise to restore wetlands and other aquatic habitats. Using Massachusetts as a model, Coastal America helped bring CWRP to the New England regional level, and in May 2001 they collaborated in the formation of a National CWRP. Through Coastal America's regional teams, the CWRP can easily fit into an established network of partners – a network that has already identified numerous local coastal restoration and protection projects.

THE FUTURE

The future of Coastal America holds many promises. Across the board, our nation's leaders are acknowledging the need to balance environmental concerns with economic progress, and this has always been Coastal America's approach. The national CWRP holds tremendous potential, as businesses are eager to contribute to environmental efforts while giving back to their communities. Similarly, the Learning Center network continues to improve, as the centers work together on cross-cutting issues and work with the federal partners to enhance their existing programs. And of course, the Coastal America partners will continue to put shovels in the ground to restore the environment and to lead the way as a partnership for action.

Over the years, the partnership has worked closely with the Massachusetts Wetlands Restoration Program, and we look forward to a future of continuing collaboration.

Virginia Tippie,
Partnership Director



Congressional and Administration leaders gathered to present the John H. Chafee Coastal Stewardship Award to Leon Panetta and to congratulate Coastal America on a Decade of Success of protecting, preserving, and restoring our nation's coastal ecosystems. (From left) Virginia Tippie, Director, Coastal America; Senator Lincoln Chafee (RI); Jim Connaughton, Chairman Council Environmental Quality; Leon Panetta, Director, former White House Chief of Staff and Chair, Pew Oceans Commission; Norman Mineta, Secretary, Department of Transportation; Congressman Sam Farr (CA); and Senator Bob Smith (NH).

Visit Coastal America at www.coastalamerica.gov

MWRP NOTE: COASTAL AMERICA IN MASSACHUSETTS

The Massachusetts Executive Office of Environmental Affairs signed a Coastal America Agreement with federal agencies on June 1, 1994 called the "Resolution to Restore Massachusetts Wetlands." This agreement has formed the basis for an ongoing collaboration on dozens of coastal and freshwater wetlands restoration projects and has resulted in over \$4 million in federal assistance to the Commonwealth. Projects accepted by the Massachusetts Wetlands Restoration Program under its GROWetlands Initiative are considered Coastal America Projects and are given priority consideration for federal financial and technical support. For an example of how MWRP and its federal partners work together, please see the [article by NRCS on page 5](#) of this newsletter. MWRP participates as a member of Coastal America's Northeast Regional Implementation Team (NERIT), chaired by Bill Hubbard of the U.S. Army Corps of Engineers, New England. NERIT has adopted Massachusetts' goal of restoring 3,000 acres of coastal and freshwater wetlands by 2010. Look for additional articles highlighting the contributions of federal partners in future editions of Massachusetts Wetlands Restoration News.

GROWetlands Project Updates *continued from page 2*

ed. Mr. Michaud stated, "The road had to be closed for a few days for us to replace the culvert successfully and repair the road and make sure that proper flow to marsh was occurring". Mr. Michaud had technical assistance from MWRP, Massachusetts Coastal Zone Management, 8T&B, local ecologist Wayne Castonguay, Massachusetts Audubon Society, and National Marine Fisheries Service. This state and local partnership has worked well to ensure the success of the Little Neck Road project and serves as a model for other wetland restoration projects around the state.

MWRP is closely monitoring the site to assess the effects of the culvert replacement. Monitoring will continue for at least five years and includes detailed study of marsh vegetation, hydrology, and soil chemistry. Data collected during the 2001 growing season has not been compiled yet, but informal visual estimates indicate a reemergence of native salt marsh plants on denuded peat and a decline in *Phragmites*.

Little Neck marsh is an essential component of the Great Marsh ecosystem, serving as important habitat for fish and wildlife. It is a nursery for juvenile winter flounder, and a passageway for smelt and alewife to their spawning ground. Great blue herons, glossy ibis, and snowy egrets frequently forage in the marsh. Restoration of tidal flows will revive the marsh's ability to provide these ecological benefits and return the marsh to the critical habitat it once was.

MARY CHASE SALT MARSH RESTORATION PROJECT PLANNED



Mary Chase Dike

The Mary Chase salt marsh is located on the outer arm of Cape Cod in Eastham. The marsh stretches from the outlet of Abelino Creek to the west, and is crossed by a stone dike at the outlet of the creek and by several local and state roads near the upper reaches of the marsh.

Massachusetts Coastal Zone Management (CZM) studied the dike and found that the dike significantly restricts tidal flows to the upgradient marsh. Stones from the dike have partially blocked the creek channel and the height of the dike blocks the lower tides from fully accessing the upgradient marsh. As a result of this tidal restriction, salinity levels in the majority of the marsh west of the dike are low and Common Reed has colonized significant portions of the marsh.

MWRP, National Park Service (Cape Cod National Seashore), Town of Eastham, CZM, and Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement have partnered to restore the 8-acre salt marsh between the dike and the first road crossing. As the stone dike may be an historic structure, MWRP hired a contractor to design the salt marsh restoration to maximize tidal flow to the upgradient marsh while minimizing alteration to the stone dike. The preliminary restoration plan calls for the partial removal of the dike from the Abelino Creek channel and the selective removal of the top layer of stones along the dike. The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the National Fish and Wildlife Foundation have contributed funds to this project. Corporate partners are welcome to donate construction services through the Corporate Wetlands Restoration Partnership (CWRP). Construction is tentatively planned for Fall 2002.

NORTH POOL SALT MARSH RESTORATION UNDER STUDY

MWRP, in partnership with the U.S. Fish & Wildlife Service (USFWS), Eight Towns & The Bay, CWRP partner Normandeau Associates, and Clipper City Survey & Engineering, is coordi-



North Pool Salt Marsh

inating a preliminary ecological survey to assess the feasibility of restoring a man-made, 100-acre brackish water impoundment back to its original salt marsh condition. The North Pool project, located in the Parker River National Wildlife Refuge (PRNWR) in Newbury and Rowley, is potentially one of the largest and most significant salt marsh restorations contemplated in Massachusetts.

The Parker River National Wildlife Refuge is internationally known as a prime birding destination and is one of the most expansive and important coastal habitat complexes in Massachusetts. Located on the southern half of Plum Island in the towns of Newbury, Rowley and Ipswich, the 4,662-acre refuge provides critical nesting, feeding and migratory habitat for dozens of species of songbirds, waterfowl and shorebirds, including several state- and federally-listed endangered species. The diversity of habitats found on the refuge – barrier beach, dunes, coastal woodlands, salt marsh, tidal flats and freshwater wetlands – are integral components of the Parker River/Ipswich Bay estuary, a state-designated Area of Critical Environmental Concern.

This diversity and ecological richness does not come about

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GROWetlands Project Updates *continued from page 10*

without effort. USFWS staff spend many hours planning, implementing, and monitoring a wide array of habitat management techniques designed to maximize the value of the refuge habitat. Vegetation and water-level management are primary approaches for increasing habitat quality and productivity.

When the refuge was acquired by the USFWS in 1950, creation of artificial freshwater impoundments in coastal wetland areas was a standard practice on national wildlife refuges. The practice was driven by sportsmen and was focused on providing habitat for targeted species of waterfowl, primarily American black ducks. The North Pool is one of three freshwater impoundments constructed within the PRNWR. A 1.5-mile earthen berm was built, isolating a 100-acre section of salt marsh from tidal flow. The berm was constructed approximately 1,500 feet out onto the marsh. Much of the fill used to construct the berm was excavated from a borrow ditch, now inside the impoundment.

Impoundments similar to the North Pool are found at virtually all East Coast refuges, including Jamaica Bay, NY, Brigantine, NJ, and Chincoteague, VA. Since the North Pool was constructed, attitudes toward wildlife habitat management on federal refuges have shifted from single-species approaches to more holistic concepts favoring overall biological diversity and ecological integrity. In addition, during the 1980s and '90s the prevalence of non-native, invasive plant species was broadly recognized as a major threat to native natural communities and ecosystem function.

In contrast to the other impoundments at PRNWR, the North Pool presents a serious management challenge to refuge managers. Construction of the North Pool has transformed the site from a salt marsh to a freshwater marsh dominated by non-native, invasive plant species, most notably purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*).

Deborah Melvin, Wildlife Biologist for the refuge, said, "Over the past ten years, we've tried many different approaches in the North Pool – mowing, prescribed burning, herbicide – with minimal success, in terms of costs versus results, in addressing the invasive plant species. And it's amazing to see how underutilized the pool is by ducks and shorebirds compared to the other two impoundments." Ms. Melvin estimates the North Pool has consumed nearly 60% of the refuge's habitat management resources though it comprises less than 10% of the managed area.

In light of this, USFWS approached MWRP to assist with a detailed ecological assessment of the North Pool's current habitat value for wetland dependant wildlife and to begin the process of evaluating potential habitat restoration tech-

niques and options. To complete this work, MWRP, through the CWRP, entered into a formal agreement with Normandeau Associates, an ecological consulting firm based in Bedford, New Hampshire. Together, MWRP and Normandeau are leading a multi-partner team in developing a preliminary restoration plan for the North Pool. The plan will aid the USFWS in assessing the benefits of a potential salt marsh restoration of the North Pool and provide several alternative methods and cost estimates for doing so.

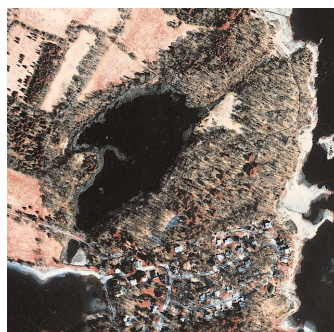
Normandeau's lead wetland scientist on the North Pool project, Patrick Fairbairn, says "The North Pool project provides society the chance to pause, look at existing conditions and how they got that way, consider desirable and feasible future options, then decide what to do and how to do it. Everyone at Normandeau who is connected with the project enjoys working for an environment of such great ecological interest."

MWRP and USFWS are also pleased to have the assistance of a team of survey, mapping, and remote sensing experts led by Clipper City Survey and Engineering of Newburyport. The survey team is using a variety of high-tech mapping techniques, including GPS and aerial photography, to produce detailed topographic, hydrologic, and habitat maps for the North Pool. These data are crucial for assessing the current condition of the Pool and designing a range of potential salt marsh restoration options. Topographic and hydrogeologic information are also needed to determine how the reintroduction of tidal flow may affect, and ultimately benefit, native plant communities and overall ecological conditions within the North Pool.

The first phase of the North Pool preliminary assessment is slated for completion in the spring of 2002.

DAMDE MEDDOWS AT WORLD'S END NEARS CONSTRUCTION

Damde Meddowes is the old English name of the former salt marsh at the World's End Reservation in Hingham. The Trustees of Reservations (TTOR) owns and operates the World's End Reservation, and are the sponsors of the project to restore the Damde Meddowes to salt marsh.



Damde Meadows

Prior to European settlement, Damde Meddowes was a typical New England salt marsh comprising approximately 20 acres from Martin's Cove in Hingham Harbor to the Weir River. In the 1630s, early colonists managed the marsh for hay production by con-

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GROWetlands Project Updates *continued from page 11*

structing small stone dams or dikes at both ends of the marsh to exclude tidal flows. In the 1800s, a third, larger dike was installed across the marsh near the Hingham Harbor side to improve road access to World's End. Since then, the hydrology of the system has been further disturbed and managed by the installation of tide gates (that have since failed) and a drainage tile system. The Meddowes was hayed until 1967 when TTOR acquired the Reservation.

Currently, the Meddowes consists of two separate areas. The smaller area seaward of the 1800s dike is reverting to salt marsh due to a break in a pipe beneath the marsh that allows salt water back into the system. The larger area (approximately 14 acres), landward of the 1800s dike, consists of an area of open water surrounded by a 4-acre stand of Common Reed.

The restoration plan, designed by the Natural Resources Conservation Service (NRCS), calls for the replacement of the failed tide gates in the dikes with concrete box culverts that have been sized to restore full tidal flows. A topographic survey of the Meddowes shows the two marsh areas at the same elevation. The natural restoration that is presently occurring in the smaller marsh suggests that the majority of the Damde Meddowes marsh will be restored when the new culverts are installed and tidal flows are reestablished.

Many partners have already joined TTOR and MWRP in supporting and donating to this project; additional contributors are sought. The Corporate Wetlands Restoration Partnership is very involved, with ENSR International donating permitting services and Massachusetts Electric donating construction funds. NRCS designed the restoration and has awarded TTOR a grant toward construction costs. The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the National Fish and Wildlife Foundation are also contributing funds. Additional CWRP partners are invited to donate funds, construction materials or construction services to this project. Construction is tentatively planned for Summer 2002.

COW YARD SALT MARSH RESTORATION UNDER DEVELOPMENT

The Cow Yard is a 16-acre salt marsh just north of Smith Neck in Dartmouth. Dartmouth Natural Resources Trust (DNRT), the non-profit land trust that owns the Cow Yard, is working with MWRP, the Town of Dartmouth, and the Buzzards Bay Project to restore this marsh. According to Stephen McCracken, DNRT Land Manager, "Dartmouth Natural Resources Trust has been protecting land throughout the town of Dartmouth for thirty years in an effort to

protect the area's natural beauty. We have made a commitment to effectively and responsibly manage the properties entrusted to us and, as owner of the Cow Yard salt marsh, feel it is important to do what we can to restore the ecological integrity of this marsh."



Cow Yard Salt Marsh

A single, 192-foot long, 19-inch by 30-inch elliptical concrete arch culvert conveys tidal flow from Buzzards Bay under Beach Avenue and into the Cow Yard. MWRP sponsored studies that found that this culvert restricts full tidal flows from entering the Cow Yard marsh. This tidal restriction has resulted in a lower salinity of the water in the marsh and has contributed to the establishment of large stands of invasive plant species in the marsh, including Purple Loosestrife, Common Reed, Poison Ivy, and Narrow-leaved Cattail.

During 2001, MWRP hired a contractor to design the marsh restoration with the goal of restoring maximum tidal flows to the marsh while protecting low-lying upgradient properties. The restoration design calls for the replacement of the existing culvert with a 4-foot by 3-foot box culvert.

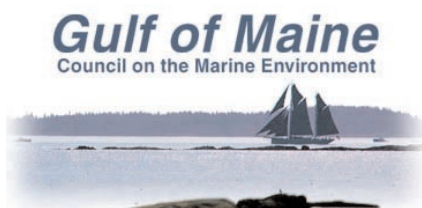
The project team is currently preparing the appropriate permit applications and securing the necessary funding to construct the project. The FishAmerica Foundation, through the National Oceanic and Atmospheric Administration (NOAA)

Restoration Center, awarded DNRT a \$30,000 grant for this project. CWRP is seeking donations of funding, materials, and construction services. Project construction is planned for late 2002.



The Five-Star Restoration Challenge Grant program is open to any public or private entity. Applications must be post-marked by March 1, 2002. For more information, go to the website at www.nfwf.org/programs/5star-rfp.htm.

NEW GRANTS FOR COASTAL HABITAT RESTORATION



The US Association of Delegates to the Gulf of Maine Council (GOMC) is seeking proposals for habitat restoration grants under a multi-year partnership with the National Oceanic and

Atmospheric Administration, National Marine Fisheries Service. These grants are designed to further the Council's goal of habitat restoration. Eligible projects include anadromous fish habitat restoration and coastal wetlands restoration in Maine, New Hampshire and Massachusetts, with consideration given to projects in Canada that may benefit trans-boundary resources. The partnership will award up to \$285,000 (US) for habitat restoration in 2002. Grant awards will range from \$5,000 to \$50,000 (US). The request for proposals and grant application materials have been posted on the GOMC website at www.gulfofmaine.org with a closing date of March 15, 2002. For more information go to the website at www.gulfofmaine.org.



Contact Us:

MASSACHUSETTS WETLANDS RESTORATION PROGRAM

One Winter Street • 5th Floor
Boston • Massachusetts 02108

Phone: 617.626.1177

Fax: 617.292.5850

email: wetlands.restoration@state.ma.us

web address: www.mass.gov/envir/mwrp

Massachusetts Wetlands Restoration News is a publication of the Massachusetts Wetlands Restoration Program on behalf of The Partnership To Restore Massachusetts Wetlands.



The Commonwealth of Massachusetts

Jane M. Swift, Governor

Executive Office of Environmental Affairs

Bob Durand, Secretary

Sharon McGregor, Assistant Secretary

Wetlands Restoration Program

Christy Foote-Smith, Director

Partnership to Restore Massachusetts Wetlands

Coordinating Committee:

Executive Office of Environmental Affairs

Executive Office of Transportation & Const.

Natural Resources Conservation Service

Environmental Protection Agency

U.S. Army Corps of Engineers

National Marine Fisheries Service

Federal Highway Administration

Mass. Assn. of Conservation Commissions

Massachusetts Audubon Society

Ducks Unlimited

Drawings on pages 4 and 12 by Tom Ford
courtesy of Tip of the Mitt Watershed Council

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CORPORATE WETLANDS RESTORATION NEWS

The Newsletter of the Massachusetts Corporate Wetlands Restoration Partnership

Winter 2002

About CWRP:

In 1999, EOEA, EPA, the Massachusetts Wetlands Restoration Program and The Gillette Company, launched the first public-private partnership for wetlands restoration. The Massachusetts CWRP is providing critical support for ecologically important projects.

CWRP HIGHLIGHTS:

- Number of Corporate Partners as of November 2001: 25
- Number of Non-profit Partners : 27
- Total Dollars Pledged to the Partnership: \$339,000.
- Total Value of Technical Services Pledged: \$416,104.
- An estimated \$1 million worth of restoration work is being accomplished by the partnership: \$313,000 worth of private donations coupled with \$794,000 of public funds awarded.
- Number of projects implemented with CWRP support: 20.

"Welcome Aboard" to New Corporate Partners...

Doyle Engineering • Vanasse Hangen Brustlin

The Louis Berger Group • Warwick & Associates, Inc.

Thank You, Environmental Business Council!

Daniel Moon, President of EBC-New England, recently sent an e-mail to EBC members announcing the need for technical service donors for wetland restoration. A dozen firms responded in the first two weeks. Dan serves on the CWRP Advisory Board.

BATTELLE SUPPORTS FISH PASSAGE PROJECT IN PLYMOUTH

Battelle, a CWRP partner, donated funds to the CWRP for the state River Restore program's dam removal project on Town Brook in Plymouth. The Town of Plymouth and other project partners will replace a deteriorated fish ladder under the Newfield Street Bridge and remove an earthen dam and nonfunctional fish ladder at Billington Street. After removal of the dam, that portion of the streambed and surrounding habitat will be restored to near-natural conditions. The Town Brook project is regarded as a precedent for this method of streambank restoration and will serve as a model within the Commonwealth.

EOEA Secretary Bob Durand recently approved several types of aquatic habitat restoration projects for CWRP support, in addition to restoration of vegetated wetlands. To be eligible for corporate support, dam removals, fishways, and other types of aquatic resource habitat restoration must be pre-qualified by EOEA agencies with appropriate technical expertise.

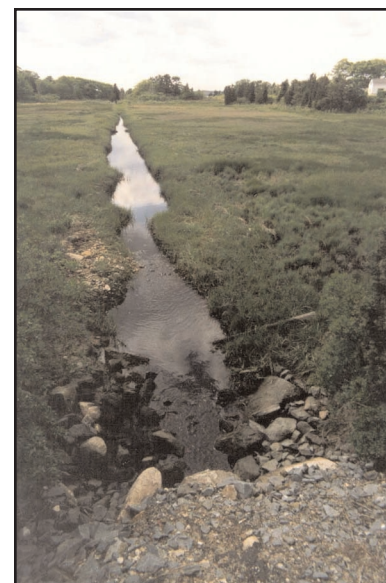
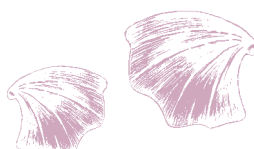


Ducks Unlimited and The Trustees of Reservations Join CWRP

These two prominent conservation organizations became the 26th and 27th non-profits to become CWRP partners. Non-profit groups can support wetlands restoration projects by educating the public about the value of wetlands in the community, by advocating for project support, and by sponsoring projects. For example, TTOR is a sponsor of the World's End salt marsh restoration in Hingham. (See article on page 11) Ducks Unlimited is providing design and engineering services at Plum Bush Creek in the Town of Newbury.



Wings Neck Rd. in Bourne showing project site upstream of restrictive culvert. Doyle Engineering of E. Falmouth donated survey work to prepare plans, and Warwick Associates of N. Falmouth is contributing delineation and permitting services.



A Variety of New Projects Recommended for CWRP

Since Spring 2001, twenty-one additional wetland restoration projects have been recommended by the CWRP Advisory Board and have received EOEA Secretary Bob Durand's go-ahead for corporate monetary or technical contributions. Corporate partners have pledged support for the following projects. Other pre-approved restoration projects are waiting for corporate donors to step forward.

Purple Loosestrife Biocontrol: Propagation and release of beetles at approved sites ([Association of Mass. Wetland Scientists](#))

Purple Loosestrife Survey and Mapping: Monitoring and mapping of loosestrife stands. ([The Foxboro Company](#), [ERM New England](#), [ERM Group Foundation](#).)

Water St., Newburyport, Merrimack Watershed: Improvement of freshwater drainage through a marsh by removal of debris and creation of several ditches and salt pannes. ([New England Wetlands](#))

Plum Bush Creek, Newbury, Merrimack Watershed: Opportunity to replace a blocked culvert that restricts flow to 15 acres. ([Ducks Unlimited](#))

Bear Creek Wildlife Sanctuary, Saugus, North Coastal Watershed: Restoration of salt marsh adjacent to former landfill converted to wildlife sanctuary. ([Wheelabrator Environmental](#))

Oak Island Marsh, Revere, North Coastal Watershed: Culvert replacement, fill excavation, and construction of salt marsh panes and creeks in this portion of the Rumney Marsh ACEC. ([Duke Energy](#))

Mill Creek, Chelsea, Boston Harbor Watershed: Restoration of portion of degraded marsh through debris removal, contouring, and re-vegetation. ([BSC Group](#))

World's End, Hingham, Boston Harbor Watershed: 20-re restoration of former salt marsh. ([ENSR International](#), [Massachusetts Electric](#))

Bridge Creek, Barnstable, Cape Cod Bay: Culvert replacement to restore up to 75 acres of salt marsh. ([Earth Tech](#))

Wings Neck Road, Bourne, Cape Cod Bay: Culvert replacement to restore 8 acres of saltmarsh. ([Warwick & Associates](#), [Doyle Engineering](#))

Namskaket Marsh, Brewster and Orleans, Cape Cod Bay: Culvert replacement to increase tidal flow to 10-acre salt marsh along Cape Cod Rail Trail. ([Battelle](#); [VHB, Inc.](#))

Quivett Creek, Dennis and Brewster, Cape Cod Bay: Investigation and removal of tidal restriction to 8-acre salt marsh. ([The Louis Berger Group](#))

Mattapoisett Neck, Mattapoisett, Buzzards Bay: Investigation and removal of abandoned road impeding tidal flow to 30 acres of salt marsh. ([Daylor Consulting](#))

CWRP Corporate Partners:

Battelle
BSC Group
Capaccio Envir. Engineering
Clean Harbors
Cyn Environmental
Doyle Engineering
Duke Energy
Earth Tech
ECAP
ENSR International
Epsilon Associates
ERM Group Foundation
ERM-New England
Genzyme
Massachusetts Electric
Normandeau Associates
NSTAR
Polaroid Corporation
PG&E National Energy Group
Raytheon Company
The Foxboro Company
The Louis Berger Group
The Gillette Company
Vanasse Hangen Brustlin
Warwick & Associates

Contact us:

Susan Redlich,
CWRP Manager
Tel. 617-292-5676

susan.redlich@state.ma.us
www.mass.gov/envir/mmmwrrp